

VIII. *Some Account of a Salt found on the Pic of Teneriffe, by W. Heberden, M. D. F. R. S.*

Read Feb. 7, 1764. **I**N the account of a journey up the Pic of Teneriffe, by Dr. Thomas Heberden, printed in the Philosoph. Transactions, Vol. XLVII. N^o 57. there is mention made of a fort of salt, as well as of brimstone, with which some parts of the Pic are covered. There is no difficulty in conceiving how brimstone may be forced up by subterraneous fires; and it is no uncommon thing to find it in other places: but it is not so easy to understand how a salt of so fixed a nature, as this is, should be sublimed to such a height without being cooled and fixed long before it arrives at the surface of the earth, where no sensible heat is perceived. Neither am I able to explain, how it happens, that a substance, so easily melted in water, is not dissolved and washed away, as fast as it can be produced, by the dews, and rains, and melted snow.

By means of my brother Dr. Thomas Heberden, I have procured a parcel of this salt collected from the Pic, a specimen of which, together with some of the sulphur, is here presented to the Society; both which, though so very pure, are just as they were taken up. My brother informs me, that the salt is found not far from the verge of the crater, and that it is called, by the Spanish inhabitants of the

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island, salitron; which is the name given by them to salt-petre; and that it is sold for about five pence a pound.

It appears to be the natron or nitrum of the anti-ents, or, as it is sometimes called, the fossil alkali, which is the basis of sea-salt: the same which is procured from the Spanish barilla, and from our own kelp.

The mineral alkali differs from the vegetable in its ready crystallizing without any addition of fixed air, which is necessary to make the latter take the form of crystals*; and in its not melting in a moist air; and on this last account it is a much more commodious ingredient in medicinal powders, than the vegetable alkali; as it is not like this apt to run per deliquium; but on the contrary, instead of attracting moisture from the air, it is robbed by the air of its own moisture, so that its crystals soon lose their transparence, and are turned to powder. The natron liquefies in a very gentle heat: it resembles the vegetable alkali in taste and fixedness, and like that is used in making soap and glass; and they are both applicable to most of the same purposes.

Of the crystals of natron, when very dry, but yet with scarce any white powder on them, 100 grains may be dissolved in 384 gr. of water, when Fahrenheit's thermometer is at 37. Such crystals quite dry, and just inclining to grow white, will lose $\frac{6 \frac{2}{5}}{1000}$ of their weight if dried, with a heat sufficient to scorch paper.

* See Dr. Black's experiments in the *Edinburgh Essays*, Vol. II. page 218.

“ The vegetable alkali has a stronger affinity to the acid spirits of vitriol, nitre, and marine salt, than the fossil ;” for

(1) If the common alkali be added to a saturated solution of Glauber's salt in water, the spirit of vitriol will leave the natron; and uniting itself with the vegetable fixed salt will form vitriolated tartar; which being of difficult solution, much of it will crystallize and fall to the bottom. while the natron, robbed of the vitriolic acid, remains dissolved together with a small portion of the vitriolated tartar.

(2) Gr. 166 of quadrangular nitre were dissolved by heat in a solution containing gr. 138 of pearl-ashes. On cooling, there shot some crystals of common nitre, the nitrous acid having left the fossil alkali, which is the base of quadrangular nitre, to join itself with the pearl-ashes.

(3) Gr. 500 of sal-gem, which seemed quite free from sal catharticus amarus, were dissolved by heat in a solution of gr. 654 of pearl-ashes. There shot a considerable quantity of sal sylvii mixed with fossil alkali, which had been expelled by the pearl-ashes from the marine acid.

These experiments were made and communicated to me by the Hon. Henry Cavendish.

Besides the properties, which have been mentioned, the natives of the Canary islands have found out, that they can make matches by dipping paper or tow in a strong solution of natron, which will then burn, except that they do not sparkle, almost as well as if they had been dipped in a solution of nitre, though upon trial no nitre appears to be mixed with it. The salt of barilla and kelp I find, by experience, to have

this property, but in a less degree, which may be owing to their not being perfectly free from other salts.

It may be doubted whether the mineral alkali be not generated upon the Pic, where it is found, by the fitness of that sort of earth to attract out of the air some of the principles, of which it is made: for there is often seen upon walls a saline efflorescence, which proves to be this very salt; and some earth, as that at the bottom of a lake in Egypt, is said to produce it, so as to make a constant supply of a great quantity, which is every year dug up and carried away. The natron must be in great abundance in the air or earth, as it is the base of that salt, which is the commonest of all in almost every part of the world; but though it be every where found, when united to the acid of sea-salt, yet there are but very few places, where we have been able to procure it by itself.